IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently Amended) A method of detecting ~~the~~ flatness of a band ~~product~~ running along a longitudinal direction and at a relatively high temperature, ~~in which~~ wherein the band is subject to a tensile load ~~and~~ applied on ~~the~~ an angular sector of a flatness measuring roll, which is mounted to rotate ~~round~~ around an axis perpendicular to the longitudinal running direction of the band and ~~having~~ has a cylindrical external face comprising an angular contact sector ~~with~~ which contacts a portion of the band and a contact free sector, the method of detecting the flatness of the band comprises ~~comprising~~ the steps of:

measuring the load applied to the flatness measuring roll in several detection zones distributed along a length of the flatness measuring roll;

forcibly cooling the flatness measuring roll ~~down forcibly~~ by circulating a heat exchanging fluid along at least one portion of the contact free sector of the external face of the flatness measuring roll; and

determining ~~the~~ parameters responsible for ~~the~~ cooling efficiency ~~such as~~ from a group including at least one of ~~the~~ opening of ~~the~~ an angular cooling sector of the flatness measuring roll along which the heat exchanging fluid circulates, ~~the~~ an initial temperature of the ~~said~~ heat exchanging fluid and ~~the~~ a circulation flow rate of the heat exchanging fluid, ~~so that,~~

wherein after heating the flatness measuring roll ~~up~~ while passing through the angular contact sector of the flatness measuring roll by ~~in~~ contact with the band, the external face of the flatness measuring roll is returned ~~brought back~~, after passing through the angular cooling sector of the flatness measuring roll, to a pre-set equilibrium temperature.

2. (Currently Amended) The method according to claim 1, wherein forced cooling of the flatness measuring roll includes:

spraying ~~a~~ the heat exchanging fluid over at least one portion of the contact free sector of the flatness measuring roll; and

adjusting at least the temperature and spray flow rate of the heat exchanging fluid ~~and the spray flow rate in relation~~ relative to the temperature of the band and ~~the~~ thermal exchange conditions, ~~in order to bring back~~

wherein a temperature of the external face of the flatness measuring roll is returned to a set level ~~the temperature of the external face of the roll~~ immediately before ~~it goes~~ rotating through the angular contact sector.

3. (Currently Amended) The method according to claim 1, comprising:

locating the flatness measuring roll beneath the band~~,~~ and immersing a lower section of the external face of the flatness measuring roll in a heat exchanging fluid bath provided in a tub situated beneath the flatness measuring roll;

circulating the heat exchanging fluid ~~liquid~~ with an adjustable flow rate between an inlet orifice and an outlet orifice of the tub; and

adjusting at least ~~the~~ an initial temperature and circulation flow rate of the ~~liquid~~ heat exchanging fluid ~~as it reaches~~ upon reaching the bath ~~and the circulation flow rate~~, ~~in order to bring back~~

wherein the temperature of the external face of the flatness measuring roll is returned to a set level ~~the temperature of the external face of the roll~~ immediately before ~~it goes~~ rotating through the angular contact sector.

4. (Currently Amended) The method according to one of claims 1, 2 or 3, including bringing the external face of the flatness measuring roll ~~before it goes~~ prior to rotating through ~~the~~ a zone of contact ~~zone,~~ to an equilibrium temperature (t) that is linked with the temperature of the band (t_1) and the initial temperature (t_2) of the heat exchanging fluid by a formula ~~such as~~:

$$t = \frac{a\sqrt{A}\,t_1 + b\sqrt{B}\,t2}{a\sqrt{A} + b\sqrt{B}}$$

in which (a) is the thermal exchange coefficient between the band and the flatness measuring roll, (b) is the thermal exchange coefficient between the heat exchanging fluid and the flatness measuring roll, (A) the angular contact sector and (B) the angular cooling sector; and

manipulating during operation, at least one of the parameters of the formula to maintain the equilibrium temperature at a constant level.

5. (Currently Amended) A device ~~for detecting the~~ which detects flatness of a band ~~product~~ running along a longitudinal running direction and is subject to a tensile load, the flatness detection device comprising:

a flatness measuring roll mounted to rotate ~~round~~ around an axis which is perpendicular to the longitudinal running direction of the band and on which the band is ~~applied under~~ subjected to a tensile load, wherein ~~said roll has~~ the flatness measuring roll includes:

a cylindrical external face comprising an angular contact sector ~~with~~ which contacts the band and a contact free sector,

~~several~~ a plurality of detection zones distributed along a length of the flatness measuring roll, and

load measuring means for measuring a load applied to the flatness measuring roll in each detection zone;

cooling means for ~~forced~~ forcibly cooling ~~of~~ the external face of the flatness measuring roll by circulating a heat exchanging fluid along at least one portion of the contact free sector of the flatness measuring roll; and

adjusting means for adjusting ~~the~~ cooling conditions ~~in order to maintain~~ wherein the external face of the flatness measuring roll is maintained at a set temperature.

6. (Currently Amended) The device ~~for detecting the flatness of a band product~~ according to claim 5, wherein the flatness measuring roll is placed beneath the

band and comprises an upper angular sector in contact with the band and free lower angular sector, and the ~~forced~~ cooling means comprises a tub filled with a heat exchanging liquid in which is immersed at least one portion of the contact free sector of the flatness measuring roll, and a system for circulating the heat exchanging liquid, wherein said system comprises a means for adjusting the temperature and the circulation flow rate of the heat exchanging liquid ~~in relation~~ relative to the temperature of the flatness measuring roll.

7. (Currently Amended) The device ~~for detecting the flatness of a band product~~ according to claim 5, wherein the ~~forced~~ cooling means comprises at least one spray ramp parallel to the external face of the flatness measuring roll, a system for supplying a heat exchanging fluid fitted with a plurality of spray nozzles wherein each fluid jet from one spray nozzle covers a cooling angular sector, wherein the system includes means for adjusting the flow rate sprayed ~~in relation~~ relative to the temperature of the band.

8. (Currently Amended) The device ~~for detecting the flatness of a band product~~ according to claim 7, ~~wherein the device~~ further ~~comprises~~ comprising a cooling caisson extending along the contact free sector of the flatness measuring roll and inside which is placed at least one fluid spray ramp, wherein said caisson exhibits two longitudinal walls parallel to the axis of the flatness measuring roll and is retracted at an angle to delineate a roll cooling sector, wherein each longitudinal wall has an edge

parallel to the external face of the flatness measuring roll and retracted from the face by a small distance.

9. (Currently Amended) The device ~~for detecting the flatness of a band product~~ according to any one of ~~the~~ claims 5 to 8, ~~wherein the device~~ further comprising ~~comprises a~~ retraction means for ~~fast retraction of~~ quickly retracting the band relative ~~with respect~~ to the flatness measuring roll.

10. (Currently Amended) The device ~~for detecting the flatness of a band product~~ according to claim 9, wherein the flatness measuring roll is mounted to rotate ~~round~~ around its axis on a supporting cradle moving along a direction ~~transversal~~ transverse to a running plane of the band between an application position for applying the roll on the band and a retracted position, wherein said cradle is associated with two deflectors placed respectively upstream and downstream from the flatness measuring roll in the running direction of the band and on ~~the~~ a side opposite to the cradle ~~with respect~~ relative to ~~said~~ the band, ~~so that~~ wherein the band is applied on a set angular sector of the flatness measuring roll, in the application position of the ~~said~~ the flatness measuring roll.

11. (Currently Amended) The device ~~for detecting the flatness of a band product~~ according to claim 10, wherein the supporting cradle of the flatness measuring roll is mounted to pivot ~~round~~ around an axis parallel to the axis of the flatness measuring roll and is associated with at least one jack for controlling the pivoting of the

cradle between the application position ~~of the roll on the band~~ and the retracted position.

12. (Currently Amended) The device ~~for detecting the flatness of a band product~~ according to claim 10, wherein the supporting cradle of the roll is mounted to slide perpendicular to the running plane of the band, between the application position and the retracted position.

13. (Currently Amended) The device ~~for detecting the flatness of a band product~~ according to claim 10, wherein the flatness measuring roll is placed between two pairs of pinch rolls, respectively upstream and downstream, each pair of pinch rolls comprising a fixed roll and a movable roll mobile vertically for clamping the band and wherein both pairs of pinch rolls are associated respectively with individual rotational driving means that determine angular speed of the downstream rolls, a speed which is slightly greater than ~~the~~ an angular speed of the upstream rolls, ~~in order to subject~~ wherein the band is subject to a set application tension on the flatness measuring roll.

14. (Currently Amended) The device ~~for detecting the flatness of a band product~~ according to claim 13, wherein ~~the~~ rotational speeds and ~~the~~ torques applied on both pairs of upstream and downstream pinch rolls~~, respectively upstream and downstream,~~ are adjusted ~~in relation~~ relative to ~~the~~ a rolling speed in order to separately determine ~~separately the~~ tension levels of the band, respectively, at the outlet of a roll mill, on the flatness measuring roll and on a coiler.

15. (Currently Amended) The device ~~for detecting the flatness of a band product~~ according to ~~one of the claims~~ claim 5 ~~to 8~~, wherein the plurality of detection zones ~~measuring roll includes a plurality of the detection zones~~ are retracted in ~~the~~ a direction ~~transversal~~ transverse to the longitudinal running direction of the band and are distributed over ~~the whole~~ an entire length of the flatness measuring roll, wherein ~~the~~ means for measuring ~~the~~ a load in each detection zone comprises a sensor which transmits ~~transmitting~~ a signal depending on ~~the application~~ a pressure ~~of~~ applied in a ~~the~~ corresponding detection zone ~~of the band~~ as the band passes through the angular contact sector, and wherein ~~said~~ the plurality of detection zones are ~~brought back to the same~~ returned to a common equilibrium temperature, at each ~~passage~~ rotation through the contact free sector ~~of the roll~~.